REMARKS

At the outset, Applicants appreciate the thorough review and consideration of the subject application. The Final Office Action of June 4, 2004, has been received and its contents carefully noted. Claims 1-26 are currently pending. Reconsideration of the rejected claims in view of the following remarks is respectfully requested.

35 U.S.C. § 102 Rejection

Claims 1-7, 9, 11, 13-14, 16-20, and 22-26 were rejected under 35 U.S.C. § 102(e) for being anticipated by U.S. Patent No. 6,444,037 issued to Frankel, *et al.* ("Frankel"). This rejection is respectfully traversed.

The Examiner continues to give no patentable weight to various elements and limitations in the rejection of claims 1-7 and 9. More specifically, the Examiner alleges:

> no patentable weight is given to ... 'the substance balances receipt of a to-be-controlled material' . . . because a recitation of intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art. (Office Action at 3.)

The Examiner erroneously supports this determination by relying on MPEP § 2111.03 in stating, basically, that the in apparatus, article, and composition claims, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art.

Applicants note, that MPEP § 2111.03, deals with transitional phrases of a claim, thus it appears the Examiner has improperly referenced the MPEP or in the alternative is improperly applying this section to the language in the body of the claim. More specifically, this section of the MPEP deals with preambles and not the body of the claim where the disputed language resides (e.g., "the substance balances receipt of a to-be-controlled material.") Moreover, the Examiner has incorrectly characterized the disputed language as intended use. The disputed language recites a functional limitation, which is different than intended use. That is, the language explains or describes properties of the claim elements.

Again the Examiner is respectfully directed to the following:

> The subject matter of a properly construed claim is defined by the terms that limit its scope. It is this subject matter that must be examined. As a general matter, the grammar and intended meaning of terms used in a claim will dictate whether the language limits the claim scope. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. The following are examples of language that may raise a question as to the limiting effect of the language in a claim: (A) statements of intended use or filed of use, (B) "adapted to" or "adapted for" clauses, (C) "wherein" clauses, or (D) "whereby" clauses.
>
> *See* Manual of Patent Examining Procedure (MPEP) § 2106 (8th Ed., Rev. Feb. 2003) (emphasis added).

In view of the foregoing and contrary to the Examiner's assertions, the combination of various elements recited in claims 1-7 and 9, do not include intended use recitations as these claims do

not use language that suggests or makes optional. Rather, the disputed claim language includes functional limitations. Accordingly, the claim language should be given patentable weight.

For example, claim 1 recites "the substance balances receipt of a to-be controlled substance." This language must be provided patentable weight since this feature is not optional and further describes the structure of the claim. That is, this feature clearly requires a certain structure to perform this feature, i.e., a substance incorporated in the first material. For example and illustration purposes only, in paragraph number [0036] of the specification a to-be controlled substance may comprise an etching material. The substance incorporated into the first material minimizes etch-stop.

Moreover, the claim language does not raise a question of whether the language is limiting and the Examiner is respectfully directed to the examples A-D of MPEP § 2106. None of those terms outlining specific language which would raise a question of the limiting effect of the language are present in claim 1. Therefore, the Examiner is respectfully requested to examine the subject matter as required by the MPEP as claims 1-7 and 9 include language that when properly construed should be given patentable weight.

Claims 1-7, 9, and 11

In any event, the Examiner asserts that Frankel is capable of performing the alleged intended use and meets the claim. Applicants respectfully submit Frankel is not capable of performing the function of the invention nor does Frankel have the same structure. For example, the structure of Frankel does not balance receipt of a to-be controlled material.

More specifically, claim 1 recites a combination of elements, including, for example:

> A semiconductor production reactor comprising . . . at least one interior chamber surface comprising a first material and a substance incorporated in the first material, the substance balances receipt of a to-be-controlled material.

Frankel does not teach at least these features.

In the rejection, the Examiner correctly asserted Frankel discloses that the chamber is cleaned with a chamber cleaning procedure. (Office Action at p. 3.) Frankel is directed towards a chamber liner for a high temperature processing chamber. More specifically, Frankel discloses

> cleaning the chamber to eliminate deposition process residues such as undesired oxides and/or nitrides from portions of chamber 15, including the unlined chamber walls. *See* col. 54, lines 26-30.

Plasma processes are used in the cleaning step and NF_3 gas is used in the generation of the plasma etchant. But the plasma processes is not a substance incorporated in the first material, where the substance balances receipt of a to-be-controlled material (e.g., etching material). This feature is simply not taught by Frankel. Rather, Frankel merely discloses plasma etching of the chamber to remove residues prior to operation of the apparatus. Frankel describes a gettering process to absorb fluorine from the surface of the chamber walls. *See* col. 56, ll. 43-45. That is, Frankel is concerned with removing fluorine atoms as the post-clean pumping and seasoning steps are performed for reducing both particle formation and F content inside subsequently deposited films. *See* col. 56, ll. 49-51.

Accordingly, Applicants respectfully submit that claim 1 and claims 2-7, 9, and 11, which depend from claim 1, are allowable.

Claims 13-14 and 16-17

Claim 13 recites a combination of elements including, for example:

> incorporating a substance in the first material of the interior surface of the reactor chamber, the substance comprising a seasoning element or compound containing seasoning atoms or molecules that when combined with the chamber surface and/or a material to be used in the reactor chamber are relatively less volatile than a combination, alone without the seasoning atoms or molecules, of the chamber surface and the material to be used in the reactor chamber.

Frankel does not teach at least these features. Rather, as discussed above, Frankel is directed towards a plasma etch treatment prior to the operation of the chamber. Frankel removes residues formed on the chamber interior surface and does not add material to produce a less volatile combination. *See* col. 54-55. The invention, of claim 13 requires seasoning atoms or molecules combined with a material to produce a less volatile combination than without atoms or molecules.

The Examiner argues Frankel recitation at col. 56, ll. 46-48 disclosing "[a]fter the post-clean pumping step, a seasoning may be performed to recombine all free F species by either chemical reaction or trapping the F to the chamber walls through silicon oxide (SiO_2) deposition" may be read as being a less volatile combination. Applicants respectfully disagree.

First, from at least the foregoing, there is no teaching of "incorporating a substance in the first material" nor is there a teaching to produce a less volatile combination than without atoms or molecules as required by claim 13. Rather, Frankel merely describes a gettering process to absorb fluorine from the surface of the chamber walls. *See* col. 56, ll. 43-45. That is, Frankel is concerned with removing fluorine atoms as the post-clean pumping and seasoning steps are performed for reducing both particle formation and F content inside subsequently deposited films. *See* col. 56, ll. 49-51.

In contrast, the invention is not concerned with removing fluorine particles as described by Frankel. Rather, as set forth in claim 13, the invention "incorporates a substance in the first material of the interior surface of the reactor chamber" and thereby, reduces volatility. This is simply not taught by Frankel for reasons stated hereinabove.

Accordingly, Applicants respectfully submit that claim 13 and claims 14 and 16-17, which depend from claim 13, are allowable.

Claims 18-20 and 22-23

Claim 18 recites a combination of elements including, for example:

> providing a reactor chamber having at least one interior surface comprising a first material; incorporating a substance in the first material of the interior surface of the reactor to minimize an undesirable reaction at the surface and prime the reactor.

Frankel does not teach at least these features. Rather, as discussed above Frankel is directed towards a plasma etch treatment prior to the operation of the chamber. That is, Frankel does not teach incorporating a substance in the first material of the interior surface to minimize an

undesirable reactor. Frankel only uses a plasma etch. The Examiner asserts this is not persuasive and cites col. 38, ll. 35-45 of Frankel disclosing,

> The endpoint detection system of the present invention, however, may be used with either an in situ plasma or a remote plasma, such as provided by microwave plasma system 55. For example, in one exemplary process, fluorine-based gas is used to react with SiO_2 powder residue in the chamber to form a SiF_4 gas, which is drawn out of chamber 15 with the vacuum pump. When substantially all of the SiO_2 in the chamber has been consumed, the fluorine-based gas cannot react with the SiO_2 to form SiF_4. Instead, the fluorine-based gas may begin to contaminate the chamber 15 or to react with, for example, the aluminum walls of the chamber to form an aluminum fluoride compound.

This Examiner further asserts that the foregoing "equates to incorporating a substance in the first material of the interior surface to minimize an undesirable reactor." (Office Action at p. 9.) However, this section of Frankel deals with detecting an endpoint of removing SiO_2 prior to contaminating and/or reacting with aluminum walls of the chamber to form aluminum fluoride compound. There is no teaching of incorporating a substance in the first material of the interior surface to minimize an undesirable reactor condition.

Accordingly, Applicants respectfully submit that claim 18 and claims 19-20 and 22-23, which depend from claim 18, are allowable.

Claims 24-26

Claim 24 recites a combination of elements including, for example:

> incorporating a substance in a first material of an interior surface of the reaction chamber, the substance comprising seasoning atoms

> or molecules that reduce the formation of volatile compounds and complexes when fluorine encounters the surface; and
>
> conducting a production process in the reactor in which fluorine is present in the reaction chamber.

Frankel does not teach at least these features. Rather, as discussed above, Frankel is directed towards a plasma etch treatment prior to the operation of the chamber. Claim 24 requires seasoning atoms or molecules that reduce the formation of volatile compounds and complexes when fluorine encounters the surface. Again Frankel removes residues and does not teach seasoning atoms incorporated onto a first material of an interior surface of the reaction chamber.

Accordingly, Applicants respectfully submit that claim 24 and claims 25-26, which depend from claim 24, are allowable.

35 U.S.C. § 103 Rejection

Claim 8 was rejected under 35 U.S.C. § 103(a) for being unpatentable over U.S. Patent No. 6,444,037 issued to Frankel in view of U.S. Patent No. 6,508,911 issued to Han, *et al.* ("Han") Claims 10, 12, 15, and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Frankel in view of U.S. Patent No. 5,997,685 issued to Radhamohan, *et al.,* ("Radhamohan"). These rejections are respectfully traversed.

Claim 8

Claim 8 depends from claim 1 and includes all of the limitations of claim 1 by virtue of its dependency. Frankel fails to teach or suggest all of the limitations of claim 1 for reasons as discussed above with regard to claim 1. Han fails to cure the deficiencies of Frankel. Rather,

Han is directed to a corrosion resistant coating. More specifically, Han discloses coating an alumina dome of a plasma reactor with a relatively thick layer of diamond to increase a resistance to corrosion from a high-density plasma.

Accordingly, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. § 103.

Claims 10, 12, 15, and 21

Claims 10 and 12 depend from claim 1 and include all of the limitations of claim 1 by virtue of its dependency. Frankel fails to teach or suggest all of the limitations of claim 1 for reasons as discussed above with regard to claim 1. Radhamohan fails to cure the deficiencies of Frankel. Rather, Radhamohan is directed towards a corrosion resistant coating. That is, Radhamohan is directed towards a corrosion-resistant apparatus. More specifically, Radhamohan teaches corrosion resistant alloys that may contain additional elements.

Claims 15 and 21 depend from claim 13 and include all of the limitations of claim 13 by virtue of their dependencies. Frankel fails to teach or suggest all of the limitations for reasons as discussed above with regard to claim 13. Radhamohan fails to cure the deficiencies of Frankel. That is, Radhamohan does not teach or suggest, seasoning atoms or molecules combined with a material to produce a less volatile combination than without atoms or molecules as required by claim 13.

Accordingly, Applicants respectfully request that the rejection under 35. U.S.C. § 103 over claims 10, 12, 15, and 21 be withdrawn.

CONCLUSION

In view of the foregoing remarks, Applicants submit that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicants hereby makes a written conditional petition for extension of time, if required. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 09-0456.

Respectfully submitted,

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